Express Mail Label No. EL566290443US
Title: APPROXIMATE FITNESS FUNCTIONS
Inventors: Yaochin Jin et al.
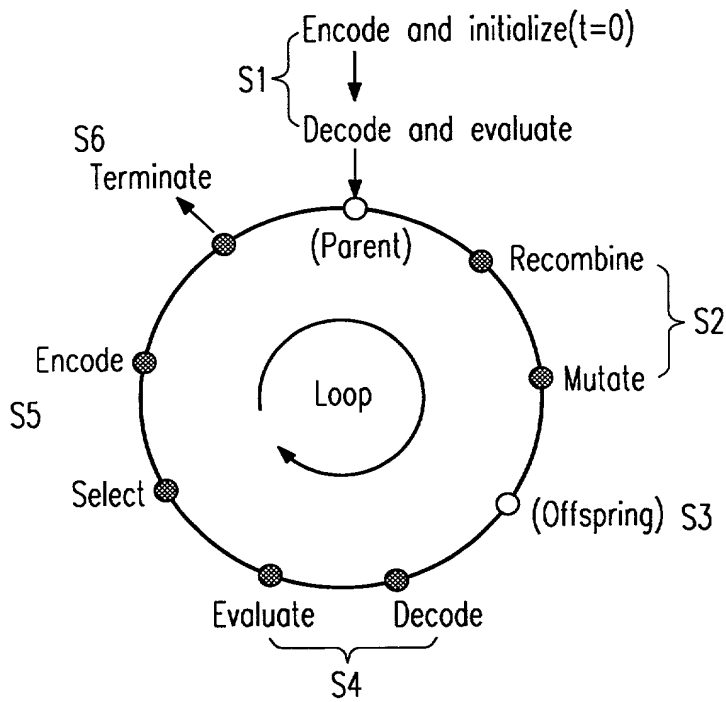Atty. Docket No.: 6445
Sheet 1 of 6

1/6
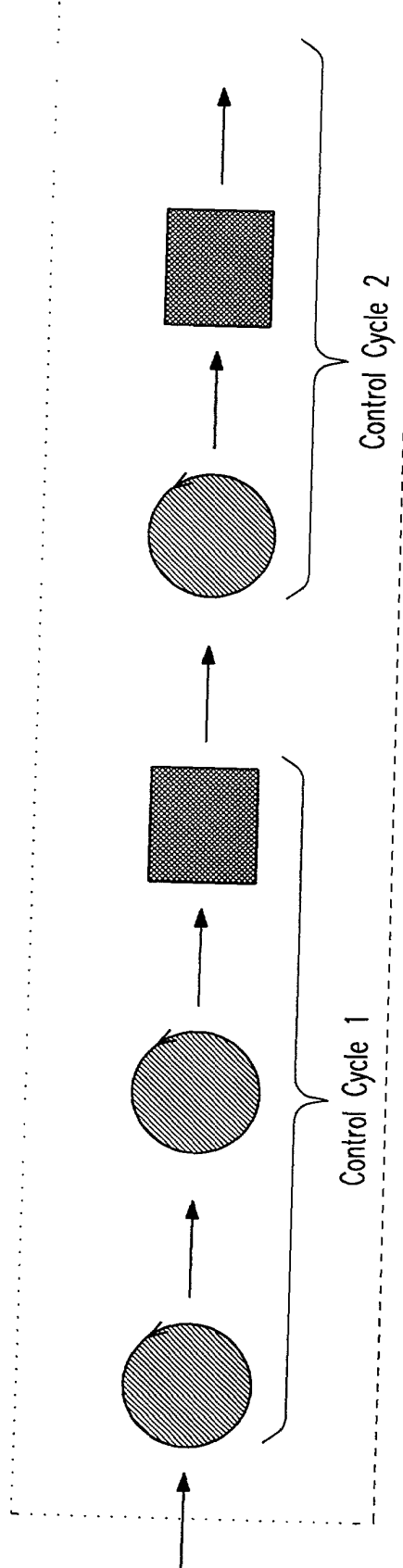
Algorithm

t:=0;
encode and initialize P(0)
decode and evaluate P(0)
do
    recombine P(t)
    mutate P(t)
    decode P(t)
    evaluate P(t)
    P(t+1) = select (P(t)
    encode P(t+1)
    t:=t+1
until terminate

Fig. 1

Express Mail Label No. EL566290443US
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Inventors: Yaochin Jin et al.
Atty. Docket No.: 6445
Sheet 2 of 6

2/6

Fig. 2

Express Mail Label No. EL566290443US
Title: APPROXIMATE FITNESS FUNCTIONS
Inventors: Yaochin Jin et al.
Atty. Docket No.: 6445
Sheet 3 of 6

3/6

Fig. 3

Begin

Initial Design — S1

Control Frequency $\eta(0)$ — S7

Evolution Control — S8

Evaluation with Approximate Model — S11

Evaluation with Original Function — S9

Data Collection — S10

End of Control Cycle — S12

On-line Model Update
Estimation of Model Fidelity
Calculation of $\eta(t)$ — S13

Final Design

S14

Express Mail Label No. EL566290443US
Title: APPROXIMATE FITNESS FUNCTIONS
Inventors: Yaochin Jin et al.
Atty. Docket No.: 6445
Sheet 4 of 6

4/6

Fig. 4

Express Mail Label No. EL566290443US
Title: APPROXIMATE FITNESS FUNCTIONS
Inventors: Yaochin Jin et al.
Atty. Docket No.: 6445
Sheet 5 of 6

5/6

(a)

(b)
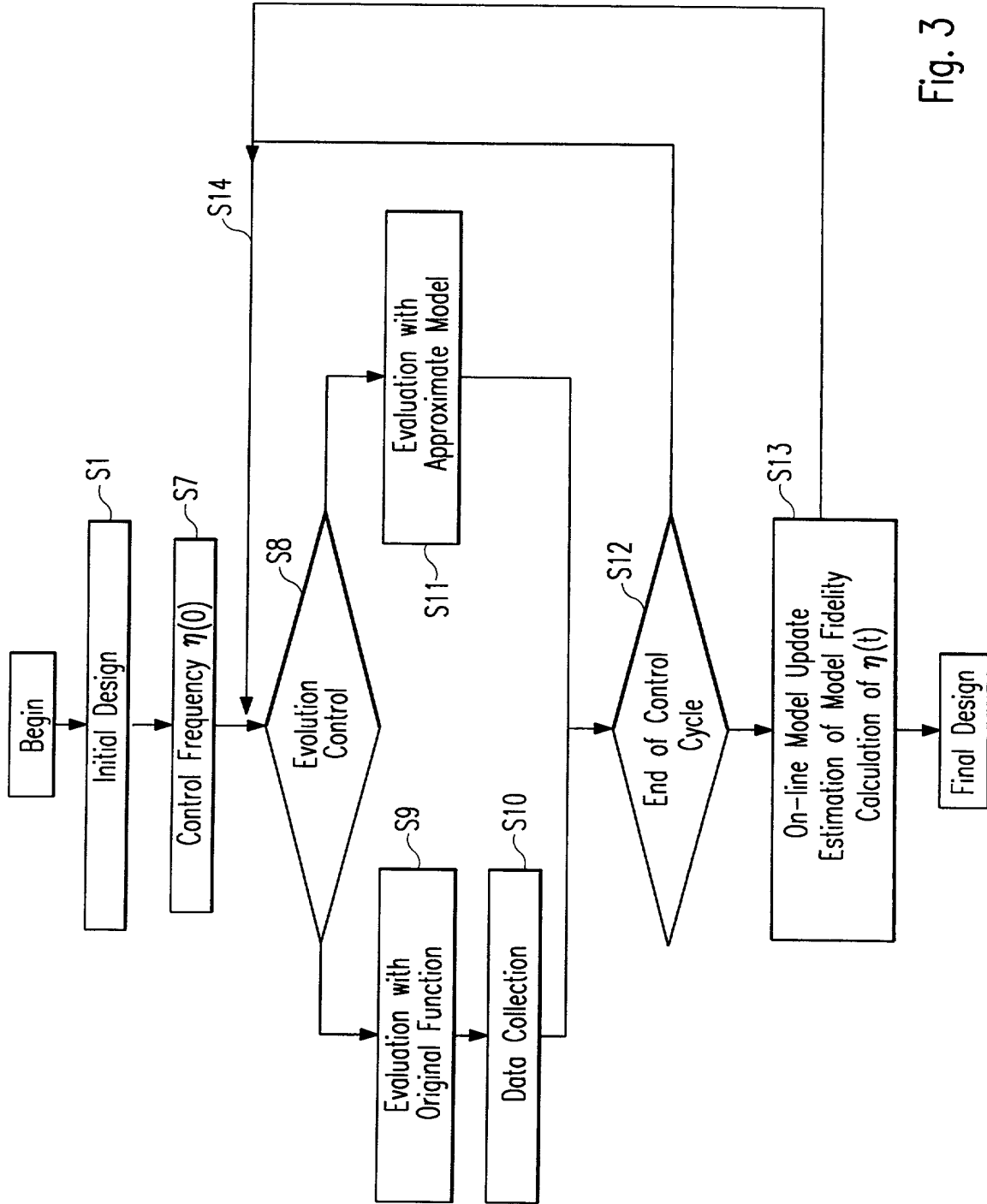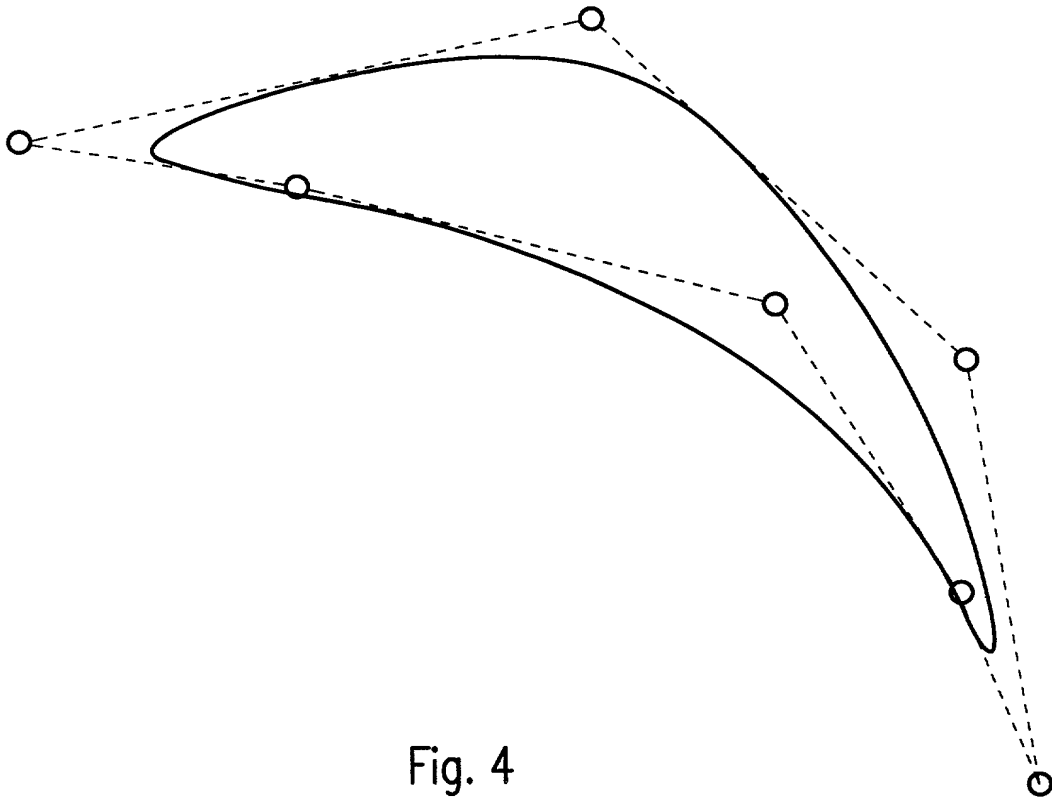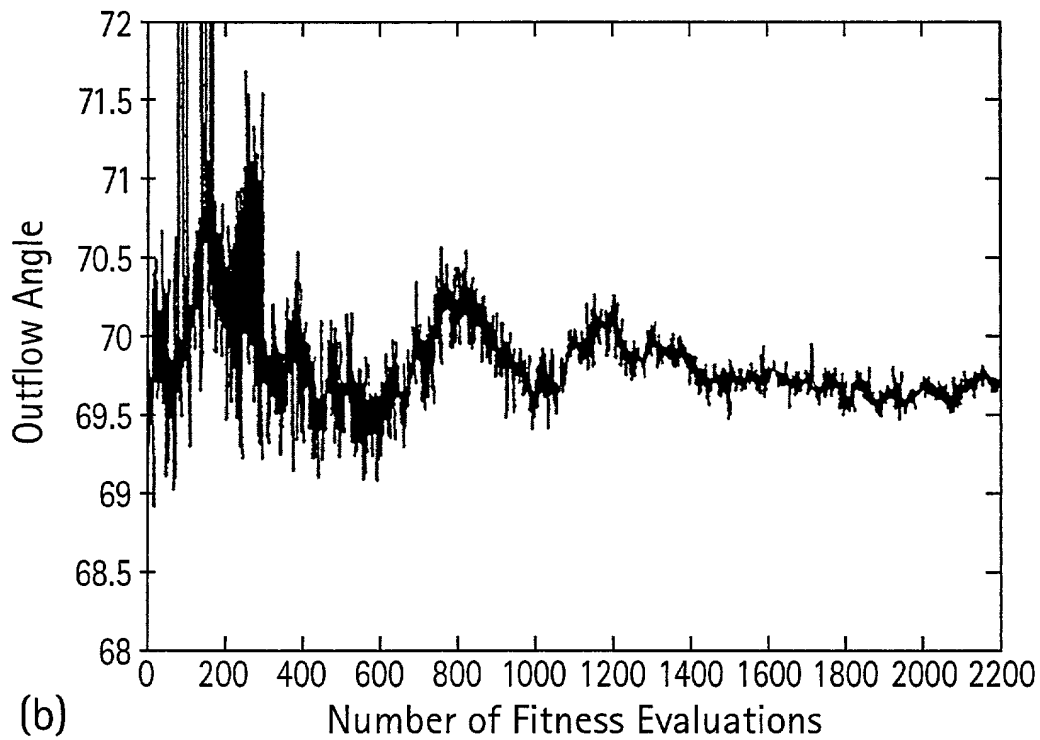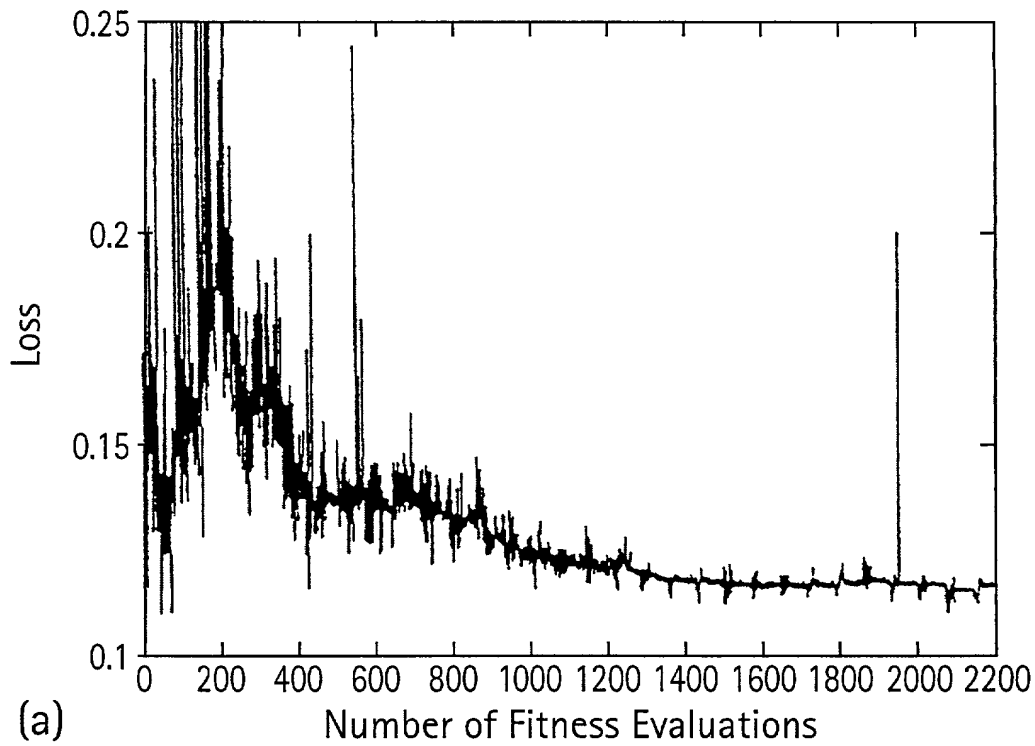
Fig. 5   Blade optimization with approximate models (a) Pressure loss
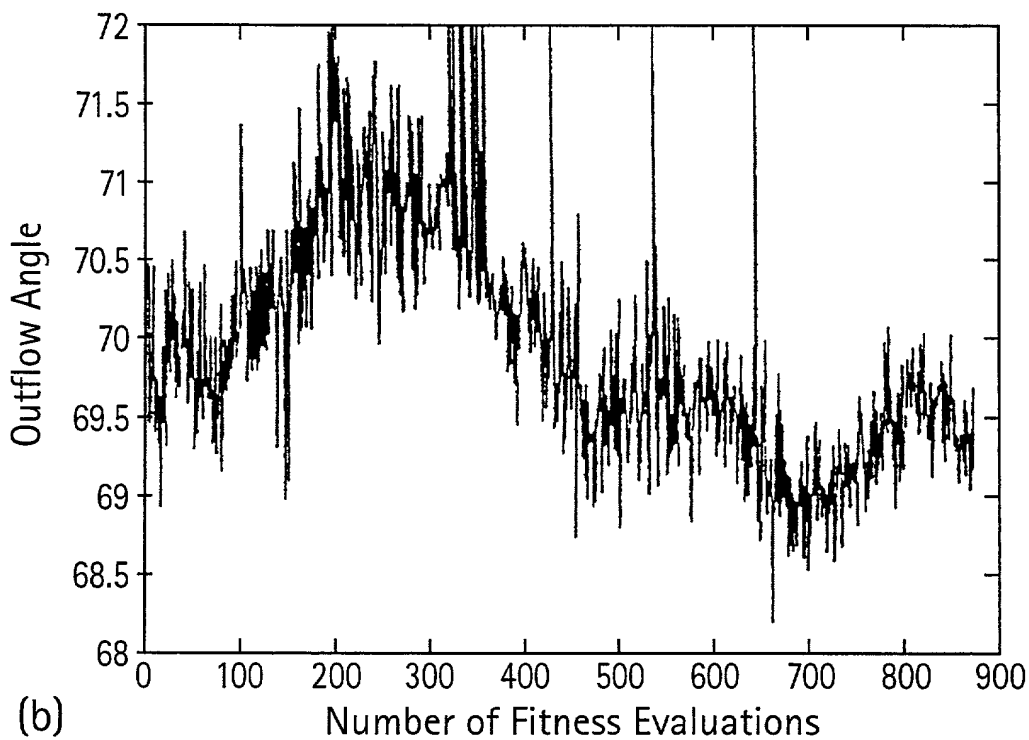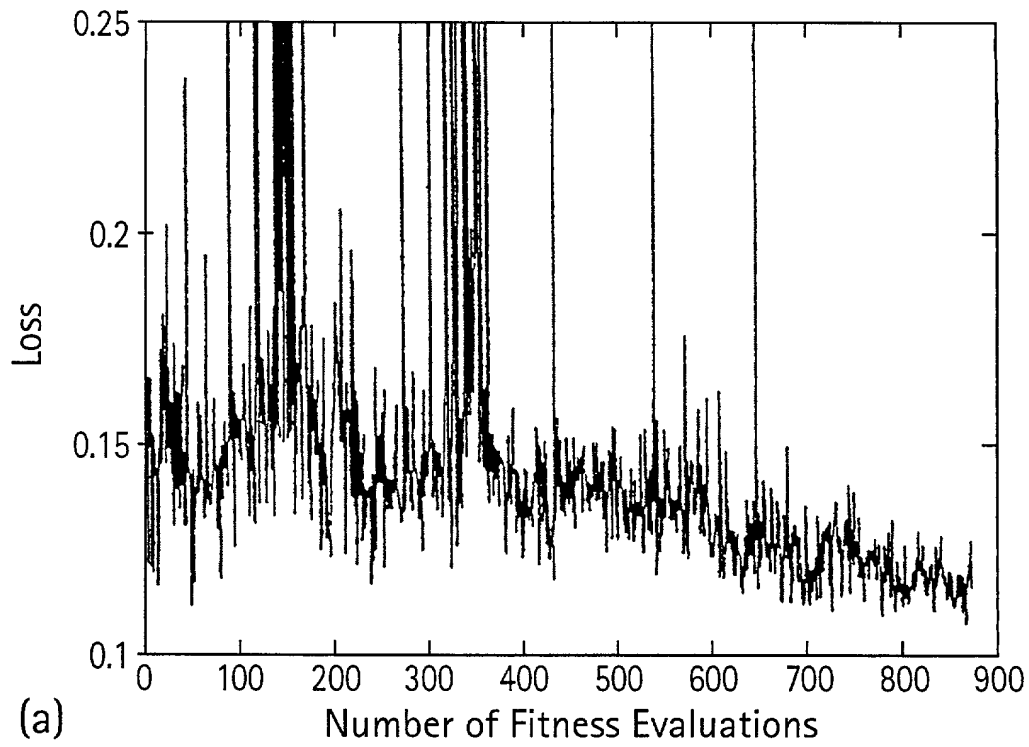(b) Outflow angle.

(a)

(b)

Fig. 6 Blade optimization with approximate models (a) Pressure loss (b) Outflow angle.